

Awareness, Utilization and Effectiveness of the Macarthur's Foundation Clinical Skills Laboratory of the University of Port Harcourt Teaching Hospital

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ABSTRACT

The MacArthur Clinical Skills Laboratory (MCSL) of the University of Port Harcourt (UPH) was launched in 2011 with limited evaluation undertaken. The awareness and utilization of the lab as well as its perceived effectiveness were assessed. A descriptive cross-sectional study design was utilized utilizing structured questionnaires. Participants included 400-600L medical students and doctors in the UPH and its teaching hospital respectively. Frequencies and percentages were used in summary statistics; 102 doctors, 55 (53.9%) females and 47 (46.1%) males; and 127 students, 77 (60.6%) females and 50 (39.4%) males respondents. About 32.4% of doctors were not aware of MCSL, 37.7% did not know its location, only 30.4% had made use of it and 40.6% did not know whom it was designed for. About 6.9% of doctors and 11.8% of students were aware of the online MCSL course. About 56.7% of students strongly agreed that their peers were critical to their learning, while 6.3% agreed that the center staff were helpful in aiding their learning. There is a need to create awareness of the presence and usefulness of the UPH MCSL.

KEYWORDS: MacArthur clinical skills laboratory, awareness, usefulness, perceived effectiveness

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INTRODUCTION

Clinical skills laboratories are practise rooms or facilities that are exactly outfitted to give clinical skills training to medical students, physicians undertaking postgraduate training, and other medical personnel as needed in a controlled and standardised environment (Bradley & Postlethwaite, 2003). Clinical skills laboratories provide a structured, laid-back setting for the instruction of medical students and in-training healthcare workers on pertinent clinical skills (Bugaj & Nikendei, 2016). Expertise exercised and acquired outside of a real-world situation has the advantage of decreasing the risk to patients, as well as the additional advantage of repetition to achieve perfection (Al-Yousuf, 2004). For training purposes, skills laboratories utilise the necessary models, mannequins, phantoms, volunteers, and standardised patients (SP) (Barrows, 1993; Bugaj & Nikendei, 2016).

Introducing a skills laboratory for medical students early in their clinical career could help students in acquiring basic clinical techniques. Some skills may not be practicable in real-life settings. In addition, other skills may not be elicited in healthy individuals. Therefore, the use of simulators, manikins, models, and medical equipment to mimic clinical scenarios helps aid students' learning (Lateef, 2010). Students also have the advantage for peer-to-peer learning in a skills lab (Weyrich et al., 2009). The use of student simulators, as well as student instructors, are options for learning in a dynamic skills lab and enhances the success of the overall learning process (Blohm et al., 2015; Bugaj et al., 2019).

The MacArthur Foundation Clinical Skills Laboratory (MCSL) of the University of Port Harcourt (UPH) was a forerunner skills lab in Nigeria, established in

2011 with the goal of providing a world-class Video Modelling (VM) and Simulation Platform (SP) for skills acquisition and assessment. It introduces clinical skills learning in the first year of clinical sciences training for the institution's fourth-year medical students. Its main objective is to provide and improve self-directed and self-motivated learning and peer review among clinical learners using standardised checklists, checkboxes, and video models to teach history taking and general and systems examination to medical students undergoing training at the institution.

Its duty for training and acquiring skills is contingent upon the availability of a suitable learning environment, sufficient skills trainers and trained support personnel, appropriate technology, and effective management. Notable is the fact that the MCSL began as a grant from the MacArthur Foundation, which terminated in 2019. However, a Memorandum of Understanding between the University of Port Harcourt and MCSL already exists to accommodate this. Informal staff and student inquiries indicated that the lab had not received much attention in terms of cleaning, upkeep, and equipment. Preliminary laboratory visits revealed limited use, since there was little activity seen. Discussions with the lab's founding members indicated worries regarding its governance and viability. The demands of students, who are the end-users, in terms of their satisfaction with the lab and degree of confidence in their newly learned abilities serve as helpful indicators of its efficacy.

Staffing concerns in a skills laboratory are also a major challenge. A clinical skills laboratory is frequently managed by personnel who should be consistent for the system's efficacy (Bradley & Postlethwaite, 2003). A centre with a significant staff turnover might severely affect the continuity of service provided and the quality of learned skills, since workers play a crucial role in a clinical skills laboratory (Owence et al., 2014).

A well-designed curriculum with learning facilitators and well-maintained learning equipment may facilitate the acquisition of clinical skills (Bradley & Postlethwaite, 2003). In the absence of this or if there is no continual development and goals are not adequately met, it may have a negative impact on the quality of learned skills and raise the likelihood of post-graduation medical malpractice.

The MCSL, which is an objective-based programme, lacks continuous monitoring, quality control, and programme evaluation to determine whether the programme has met its objectives, evaluate the performance of students, and assess issues on staff

retention and the difficulties encountered during the training process.

A programme that has been established should not be allowed to continue indefinitely without these periodic assessments to assist decision-makers in deciding whether to continue the programme as-is, adapt it to a better form (with updated and current methodologies and technologies), or terminate it.

Purpose of the Study

This study was conducted to assess the MacArthur's foundation clinical skills laboratory (MCSL) in the University of Port Harcourt (UPH). Its specific objectives included:

1. To determine the level of doctors' and clinical students' awareness of the UPH MCSL.
2. To determine the utilization of the UPH MCSL by doctors and clinical students.
3. To determine the perceived effectiveness of the UPH MCSL by clinical students.

METHODS

A descriptive cross-sectional study was conducted to assess the awareness, utilization and effectiveness of the MacArthur Clinical Skills lab of the University of Port Harcourt.

The clinical skills laboratory of the MacArthur Foundation is situated at the University of Port Harcourt (UPH), Rivers State. Since its founding in 1975 until recently, the UPH was the sole medical school in the state of Rivers for decades. It generated the large majority of the state's and South-South Nigeria's physicians. It is a public institution of higher education situated in the approximately 5 million-person metropolis of Port Harcourt. The College of Health Sciences, together with the department of education and other clinical faculties, co-directs the MCSL. The first class of 33 students enrolled at the College of Health Sciences during the 1979-1980 academic year, when academic activity began. There are now twenty-eight departments and four faculties (Clinical Sciences, Basic Medical Sciences, Pharmaceutical Sciences, and Dentistry) at the college.

The study population included medical students in 400, 500 and 600 level who had used the MCSL and medical doctors and clinical lecturers working in the UPTH for at least 6 months.

A sample size of 89 doctors and 119 students was obtained using a 5% prevalence of doctors using the skills lab and a 90.3% of students who perceived the lab as being effective from a previous study (Soliman & Fouda, 2008). At a 95% level of confidence and a precision of 0.05, the Fisher's method for a single

sample prevalence cross-sectional research, was used. (Charan & Biswas, 2013)

For the quantitative interviews, students were chosen using systematic random sampling with their class rosters serving as sample frames for each class (400, 500 and 600 level). On the basis of proportional simple random selection, physicians from each cadre (Consultants/Chief or Principal Medical Officer, Senior registrars/Senior Medical Officers, and Registrars/Medical Officers) were chosen.

Data were obtained using self-administered questionnaires to the students to assess their awareness, usage and perceptions of effectiveness of the MCSL and self-administered questionnaires to the doctors in UPTH to assess their awareness and usage of the MCSL.

Awareness of lab use was characterised as 'yes – I am aware' or 'no – I am not aware', while frequency of lab usage was classed as 'never', 'less than once a week', 'once a week', '2-3 times a week', '4-5 times a week', and 'daily'. "I do not know," "both medical students and physicians," "all clinical students and staff," and "only medical students" were responses to the question of who the MCSL was developed for.

Continuous data were represented by means and standard deviations, whilst categorical variables were described by frequencies and proportions.

Ethical approvals and permissions were obtained from the University of Port Harcourt Research Ethics Committee and the centre director of the MCSL respectively. Written signed informed consents were obtained from all participants before interviews were conducted.

RESULTS

Table 1: Awareness and Usage of the MacArthur Clinical Skills by Students

Variable	Frequency	Percentage
Did you take the course ICM in year 4 (N =127)		
Yes	127	100.0
No	0	0.0
Frequency of training sessions in the MCSL (N = 127)		
Daily	18	14.2
Four to five times a week	7	5.5
Two to three times a week	38	29.9
Once weekly	41	32.3
Less than once a week	19	15.0
Never	4	3.1
Are you aware of the MCSL online training course on CIIT UNIPORT platform? (N = 127)		
No	112	88.2
Yes	15	11.8
Frequency of use of MCSL online training course on CIIT UNIPORT platform?(N = 127)		
Daily	5	3.9
Four to five times a week	1	0.8
Two to three times a week	0	0.0
Once weekly	4	3.1
Less than once a week	2	1.6
Never	115	90.6

In this particular research project, a total of 127 replies from students were gathered, with 77 (60.6%) females and 50 (39.4%) men. 53.5 percent of students were in year 6, 29.9% were in year 5, and 4 percent were in year 4. (18.6%). A total of 102 medical professionals answered to the surveys, including 55 female doctors (representing 53.9%) and 47 male physicians (representing 46.1%). There was a very even distribution of medical professionals across all three cadres (36.3%, 33.3% and 30.4%). There were physicians from seventeen different departments at the hospital who filled out the survey, but the department of anaesthesia had the most respondents (38.2%).

The Introduction to Clinical Medicine (ICM) course is a required module for students at the 400 level, and every single one of the students who replied to the questionnaire has completed it. They had many sessions, and the majority of students who responded said that they had attended MCSL courses once every week (41; 32.3%). There was a very low degree of familiarity with the MCSL course's online platform. Only 15 (11.%) of the

students were aware of the online course, and only 12 (9.%) of those students had actually enrolled in the course, even if they only used it occasionally. (Table 1)

Table 2: Awareness of the MacArthur Clinical Skills Lab by Doctors

Variable	Frequency	Percentage
Are you aware of the MCSL? (N = 102)		
Yes	69	67.6
No	33	32.4
Where is the MCSL located? (N = 69)		
Above the Kitchen	43	62.3
In the faculty of clinical sciences	0	0.0
In the college of health science	0	0.0
I do not know	26	37.7
For whom was the MCSL designed? (N = 69)		
I do not know	28	40.6
Both medical students and doctors	25	36.2
All clinical students and staff	16	23.2
Medical student only	0	0.0
Are you aware of the MCSL online training course on CIIT UNIPOINT platform? (N = 102)		
No	95	93.1
Yes	7	6.9

More than one third of doctors, or 33, were not aware of the MCSL existence (32.4%). 43 physicians, or 62.3 percent, were able to accurately identify the site of the MCSL, whereas 26 doctors, or 37.7%, were clueless about its precise placement. Only 25 (36.2%) of doctors responded that the MCSL was designed for both medical students and doctors, while 16 (23.2%) of doctors responded that it was designed for both clinical students and clinical staff. The majority of doctors, 28, (40.6%), were unaware of who the MCSL was intended for. The vast majority of doctors, 95 (93.1%), were unaware of the availability of the MCSL training course that was offered online. (Table 2)

Table 3: Utilization of the MacArthur Clinical Skills by Doctors

Variable	Frequency	Percentage
Have you ever made use of the MCSL (N=102)		
No	71	69.6
Yes	31	30.4
Frequency of use of the MCSL (N=31)		
Less than once a week	30	96.8
Once weekly	1	3.2
Two to three times a week	0	0.0
Have you ever enrolled online for the MCSL on CIIT UNIPOINT platform? (N=102)		
No	101	99.0
Yes	1	1.0
Frequency of use of the online MCSL training on CIIT UNIPOINT platform? (N=1)		
Less than once a week	1	100.0
Once weekly	0	0.0
Two to three times a week	0	0.0

When questioned about their actual utilisation of the MCSL, 31 (30.4 percent) of the physicians had ever made use of the physical MCSL, but just 1 (1.0 percent) of the doctors had registered in an online course for the MCSL. Those people who did utilise the facility did so seldomly, with the majority of users coming to the laboratory little more than once every seven days – thirty (96.8 percent). The enrollment in the online course was extremely low, and the only student attended class fewer than once a week on average. (Table 3)

Table 4: Students' perception of effectiveness of the MCSL in meeting its objective in clinical skills learning

Statements (N = 127)	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The lab made me understand how to clerk very proficiently	8 (6.3)	22 (17.3)	49 (38.6)	31 (24.4)	17 (13.4)
The lab made me understand how to perform clinical examinations very proficiently	16 (12.6)	49 (38.6)	43 (33.9)	14 (11.0)	5 (3.9)
The video models were of good quality suitable for self-directed learning	14 (11.0)	43 (33.9)	24 (18.9)	27 (21.2)	19 (15.0)
Learning from my colleagues was a critical aspect of my learning in the lab	72 (56.7)	32 (25.2)	17 (13.4)	2 (1.6)	4 (3.1)
The centre staff were very helpful in aiding my learning process during the posting	8 (6.3)	38 (29.9)	52 (40.9)	15 (11.8)	14 (11.0)
Because of my training in the lab, during my clinical rotations, it was easier to perform bedside clerking and examination	12 (9.4)	52 (40.9)	39 (30.7)	15 (11.8)	9 (7.1)

Students were given a Likert scale to react with their degree of agreement with statements on the impact that the MCSL and its methodologies had on their training. The assertion that "the lab made me understand how to clerk very proficiently" was met with disagreement from 31 (24.4%) of the students, while 49 (38.6%) of the students had a neutral stance on the topic. A greater number of students agreed with the statement that "the lab made me understand how to perform clinical examinations very proficiently" was 49, which is 38.6 percent of the total. In terms of the videos' quality, 14 students (11.0 percent) strongly agreed with the statement, while 43 students (33.9 percent) agreed with it. The statement asserted that "the video models were of good quality suitable for self-directed learning." (Table 4)

When asked if they agreed with the statement that their colleagues were a significant element of their learning in the MCSL, 72 students (56.7 percent) strongly agreed with the statement, whereas just 2 students (1.6 percent) disagreed and 4 students (3.1 percent) severely disagreed with it. 52 students, or 40.9% of the total, had no opinion on the statement "the centre employees were extremely helpful in aiding my learning process during the posting," whereas 38 students, or 29.9% of the total, agreed with the statement. When asked about the effect that the MCSL training had on their confidence in completing bedside clerking and physical exams during their clinical rotations, the majority of students thought that it was beneficial (52; 40.9 percent), whereas 15 (11.8 percent) students disagreed. (Table 4)

DISCUSSION

In this study, the awareness, utilization and perceived effectiveness of the MCSL was assessed.

The level of awareness by doctors and use of the MCSL by both students and doctors was low. Students compulsorily rotate through the lab during their Introduction to Clinical Medicine Posting, thus were all aware of its existence. However, among doctors (both clinical lecturers and others) a significant proportion did not know it existed and among those who knew, most did not understand its usefulness. Thus they could not use it in training their students and relied on real-life scenarios. The lack of awareness was also buffered by a poor motivation towards using the lab. This was buttressed by the disappointment they experienced when they got there with the poor state of the infrastructure and few efficient support staff.

Students had on average a good perception about the effectiveness of the MCSL in improving their

clerking and physical examination skills. It was also observed that students strongly agreed to the fact that learning from their peers greatly enhanced their skills training in the lab. Students mainly served as role players during their practical demonstrations. They also served as Simulation Patients for their peers. Similar findings were obtained from a Randomised Control Trial which reported better patient-physician communication among students that practiced technical skills by performing role-plays. They concluded that introducing role-plays enhanced the realisation of technical skills training (Nikendei et al., 2007).

Agbarakwe & Augustine (2018) also had similar observations. In this study, students in medical school agreed that they could freely simulate clinical skills steps on their peers; that they could freely give themselves for practice during training sessions; that they could allow their peers to use them for practice depending on the type of skill to be performed; and

that they could only allow themselves to be used for clinical skills practice in the presence of a chaperone. Despite the fact that medical students can utilize their peers or give themselves freely to their peers during clinical sessions in MCSL, this data implied that the kind of clinical skills to be performed and the presence of a chaperon are both important considerations. The medical students, as a result, are conscious of their gender differences and seek to protect their dignity, especially during clinical skills practical sessions at MCSL.

They also concluded that while clinical instructors assist medical students in understanding the do-steps required to perform each clinical skill, during practical sessions in MCSL, the students preferred practicing with their peers using a peer tutoring learning approach, which was developed by the authors (Agbarakwe & Augustine, 2018). This approach allows them to be more relaxed during the practical session because they can freely interact among themselves, gain a deeper understanding of the clinical skills through immediate constructive feedback, and also acquire the necessary skills to master the clinical skills through peer tutoring.

This research was restricted in that it could only evaluate the opinions of doctors and medical students about their familiarity with and use of the MCSL. This restriction was a limitation of the study. Other clinical health professionals have the right to utilise the MCSL, and as such, they may have had meaningful influence on its usage and the reasons for its non-use. In addition, it would have been beneficial to find out whether or not the MCSL was able to satisfactorily meet the requirements of other clinical lecturers and staff members besides physicians.

In conclusion, the results of this research indicated that just a small fraction of medical professionals were aware of the MCSL's existence, and an even smaller number had ever made use of it. Knowledge among the students was high as a result of the mandatory rotation; nevertheless, there was a low degree of awareness among the students regarding the online MCSL course. The MCSL was only used on a very infrequent basis, despite the fact that there were several obstacles to overcome. Students who utilised the lab did so mostly during the mandatory ICM posting at the 400 level, and the majority of them never returned until they were ordered to do so by certain clinical lecturers.

It is recommended that the management board of the MCSL establish a continuous monitoring and re-evaluation of the MCSL on a periodic basis in order to implement prompt action. There is also an urgent need for the University to do more in making people

aware of the existence of the MCSL as well as the technological resources it provides, particularly to clinical personnel and academics. To facilitate easier access to the MCSL, the Teaching Hospital needs to install more conspicuous signage at key locations across the facility.

Contributions to Knowledge

This is the first review of the MCSL at the University of Port Harcourt that is intended to be thorough. The outcomes of this review will be shared with relevant parties and used as a model for the overhaul and modernization of the MCSL, both of which are urgently required. It will also act as an extra motivation for all clinical students and staff to make better use of the MCSL, which was one of the MCSL's initial purposes when it was created. The end users of the lab will be further motivated to extract the maximum value from it if they are made aware of the possibilities of the lab and how it may assist in the development of clinical skills.

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